

Presenting an Economical Model for Property Rights Protection Mechanisms

Azad Khanzadi¹, Morteza Sameti², Rahman Khosh Akhlagh³

¹PhD Candidate in Economics, University of Isfahan, Iran

^{2,3}Professor of Economics, University of Isfahan, Iran

ABSTRACT

One of the significant institutions in economics is the institution of property rights. Property rights are a means which helps people in a society to form mutual expectations. These expectations are stated in the form of rules, customs and traditions. Protecting property rights includes facilitating private contracts and restricting compulsion, threats, and expropriation by the government. The requisite condition for the establishment of property rights is their applicability. Therefore, it is apparent that it is not possible to establish property rights without an agent enforcing the rights (which are somehow determined by the society) because property rights are not self-defending or self-enforcing. Hence the question arises as to who is responsible for protecting property rights?

In so doing, this study employs a mathematical model in order to investigate various mechanisms of protecting property rights which include private enforcement, enforcement by a centralized planner (the government) and a joint of the two.

According to the findings, measures taken by the central planner (the government) to appropriately protect property rights could not completely cover the risk resulting from not preserving property rights because in the one hand, the centralized planner (the government) could not have access to full information regarding people's properties. In the other hand, the private enforcement of property rights will not yield desirable results because the costs of private enforcement are very high and the private sector cannot afford all these costs. Therefore, in such a situation, none of the enforcement methods, neither private enforcement nor enforcement by the centralized planner, is preferable over the other one. Thus, a blend of these two enforcement methods could always yield better results and cut down on social costs and improve social welfare.

KEYWORDS: protection of property rights, private sector, centralized planner (the government).

1. INTRODUCTION

The use of the term 'institution' has a long history and Giambattista Vico is said to have used this word in 1725 for the first time. However, it has been in the recent years that the use of this word in social sciences especially philosophy, sociolinguistics, political sciences, geography and economics has increased. The use of this term has increased since the 1970s and various definitions have been offered for it.

Thorstein Veblen (1898), the American institutionalism economist, states that institutions are the product of past processes which have been adopted for past situations. Thus these institutions will never be totally compatible with our present needs. In addition, he also defines institutions as habits formed in the minds of people which are common among most people.

John Commons (1924) who is an American institutionalism economist and is considered the founding father of the economic analysis of institutions and property rights through history, defines institutions as clusters of rules accepted by the public which determine opportunities and restrictions of the agents, i.e. what they may do, what they must do, what they can or cannot do. From his point of view, institutions are rules stipulating what people must or must not do what people can do without the interference of others, what expectations people have that is within collective power. In addition, he also, defines institutions as collective actions performed to control individual actions. In other words, an institution is a collective activity to restrict, free, or expand individuals' activity.

Hamilton (1932), Ruttan and Hyami (1984), Williamson (1985), Neale (1987), North (1991), Pelikan (1988), Dopfer (1991), Knight (1992), Sjostrand (1995), Burki and Perry (2001), Acemoglu et al. (2011), Rodrik (2004), Chong and Zanforlin (2004), Searle (2005), Brown (2005), Hodgson (2006), and Aoki (2007), too, have each offered definitions for institutions.

One of the significant institutions in economics is the institution of property rights. According to Commons (1950) who regards property rights as the most fundamental concept in his institutional theory, property rights is related to scarcity and includes all activities that the society or individuals are free to do or not to do regarding the ownership of a property. Unlike classical economist, Commons does not consider property rights as 'granted', rather, he shows that property rights is the product of a collective action. From Alchian's

(1965) point of view, property rights means protecting people's properties against the choice of the others – people who tend to use sources and properties against the owners' will. This definition corresponds to that of jurists especially Hohfeld (1913).

Demsetz (1964) views property rights as a means in the society which helps people to form mutual expectations. These expectations are stated in the form of rules, customs and traditions of a society. According to Demsetz, property rights indicate the right of benefitting or harming oneself or others. Thus property rights clearly states how people could benefit or lose and therefore, who must attend to whom so that people's activities are adjusted and modified.

North (1990) defines property rights as rights of the individuals to enjoy the benefits of the businesses they own as well as the benefit of the goods and services they possess.

In addition, Furuboton and Pejovich (1974), Libecap (1989), Bromley and Cernea (1989), Clague et al (1997), Fedderke et al (2001) and Shavell (2003), too, have each offered some definitions for property rights.

Protection of property rights includes facilitating private contracts, restricting compulsion, and expropriation by the government. Property rights is protected and supported in order to bring about the necessary motivation for working and keeping up the quality of durable goods and support people against the dangers of manageable risks and uncertainty. Property rights are valuable only when it is able to be monopolized. The requisite condition for establishing property rights is that they are applicable. Therefore, it is apparent that property rights are not enforceable without an agent enforcing rights (who has somehow been assigned by the society). That is because property rights are not self-defending or self-enforcing (Kaplow and Shavell 2002, Gleaser and Shleifer 2003). Therefore, the question arises as to who is responsible for protecting property rights?

In 1960, posing the question as to what the optimal strategy is in protecting property rights, Ronald Coase caused controversial debates among economists which still continue. In economic literature, there are two general theories on this issue:

1. Private-Ordering view
2. Legal-Centralist view

According to private-ordering view, in order to achieve mutual benefits of exchange, economic employers define and protect property rights without referring to the role of the government. But unlike the private-ordering view, the legal-centralist view believes that property rights must be defined and ensured by the government.

Considered the proposed view regarding the protection of property rights, it is very important to investigate what mechanism of protecting property rights (private enforcement, enforcement by the government, or a blend of the two) yields better results. That is because efficient protection of property rights in contracts as well as economic interactions between economic factors in the society leads to the progress and improvement of the economic indexes and creates better conditions. Therefore, this paper attempts to investigate which mechanism of protecting property rights (private enforcement or enforcement by the government or a joint of the two) would lead to better economic conditions. Accordingly, chapter two of the study is devoted to the literature review; chapter three is devoted to the proposed mathematical model and chapter four offers conclusions.

2. LITERATURE REVIEW

Economics studies optional exchanges of human products by individuals. It is the individuals who determine conditions for exchanging goods and services according to the differences of preferences and skills. It is the individuals and agents who exchange information and seek the best way of allocating resources in these competing productions. They get to know each other's preferences and take lessons from their previous mistakes. It is in such a framework that economic good and services achieve such quality that appeal to the consumer. To achieve satisfaction with goods and services, one must possess those goods or services and be their owner. By in the real world, since one has many opponents, one's ability for owning and consuming goods faces uncertainty.

This issue is also true for the economical employers' demands for factors of production. Therefore, accepting such issues, economy could be considered as a set of families and businesses with numerous decisions each of which includes a large number of exchanges. Each exchange, in turn, is the trade of package of property rights. Therefore, economics could be deemed the science of investigating how to trade packages of property rights (Kaplow and Shavell 2002,).

Commons, Ronald Coase, Demsetz, Douglas North, and Alchian and Hernando are some of the premiers and thinkers of property rights approach. The general viewpoint in the modern institutional approach is that for having desirable economic performance it is essential to clearly define and implement property rights.

According to Commons (1950) who regards property rights as the most fundamental concept in his institutional theory, property rights is related to scarcity and includes all activities that the society or individuals are free to do or not to do regarding the ownership of a property (Kaufman, 2003). Unlike classical economist,

Commons does not consider property rights as 'granted', rather, he shows that property rights is the product of a collective action.

From Alchian's (1965) point of view, property rights means protecting people's properties against the choice of the others – people who tend to use sources and properties against the owners' will. This definition corresponds to that of jurists especially Hohfeld (1913) (Grossman, 2001).

Demsetz (1990) views property rights as a means in the society which helps people from mutual expectations. These expectations are stated in the form of rules, customs and traditions of a society. According to Demsetz, property rights indicate the right of benefitting or harming oneself or others. Thus property rights clearly states how people could benefit or lose and therefore, who must attend to whom so that people's activities are adjusted and modified.

North (1990) defines property rights as rights of the individuals to enjoy the benefits of the business they own as well as the benefit of the goods and services they possess. According to Eggertsson (1990), property rights are people's rights to use resources. He considers two different types of property rights, i.e. economic property rights and legal property rights. An individual's economic rights to a good or service is his or her ability to consume that good or service and it is defined indirectly through the transaction of that good or service. This ability includes the right to use a property, the right to earn an income from a property and make contracts with other people, and the right to transfer the ownership to another party. In contrast, legal property rights are rights recognized and enforced by the government. In fact, legal property rights are rights that are granted by the government and help people achieve economic property rights (Vandenberg, 1999).

Protection of property rights includes facilitating private contracts, restricting compulsion, and expropriation by the government. Property rights is protected and supported in order to bring about the necessary motivation for working and keeping up the quality of durable goods and support people against the dangers of manageable risks and uncertainty. Property rights are valuable only when it is able to be monopolized. The requisite condition for making property rights is that they are applicable. Therefore, it is apparent that property rights are not enforceable without an agent enforcing rights (who has somehow been assigned by the society). That is because property rights are not self-defending or self-enforcing (Kaplow and Shavell 2002, Gleaser and Shleifer 2003). Therefore, the question arises as to who is responsible for protecting property rights?

In 1960, posing the question as to what the optimal strategy is in protecting property rights, Ronald Coase caused controversial debates among economists which still continue. In economic literature, there are two general theories on this issue:

1. Private-Ordering view
2. Legal-Centralist view

According to private-ordering view, in order to achieve mutual benefits of exchange, economic employers define and protect property rights without referring to the role of the government. This theory is a view which has been offered in the early theories regarding the emergence of property rights. In this theory, no active role is considered for the government. Theories of Coase (1960) and Demsetz (1967) are in this area. Although in Coase's theory it is not essential to set rules to protect property rights, his argument does not necessarily refer to the supremacy of the private-ordering view. Demsetz (1967), too, views property rights as a phenomenon for internalizing external effects and an answer to changes in technology and relative prices and therefore, he advocates the private-ordering view.

Although the potential significance and value of legal institutions and property rights have been emphasized in the modern institutional economics, the proponents of the private-ordering view believe that the real need for such institutions has been exaggerated. North emphasizes the importance of such values in supporting property rights only as a supplement of the legal enforcement of property rights. However, some researchers believe alternative strategies used by the private sector could adopt a legal form and pave the way for economic growth without the need for government. It is possible that people organize their transactions so that they increase their capital without the help of legal institutions. In such situations, the law and the legal institutions are not the requisite conditions for supporting transactions and economic growth. When social groups or nations are claimants to ownership, there is no need for the interference of a third party for enforcing and protecting property rights. There is even no historical basis for the interference of the third party in protecting property rights in case of the existence of private claimants so much so that as stated by Vernon Smith (1993), property rights has priority over the government.

Grossman (2001) state that interference of the government and legal system is neither a requisite nor a sufficient condition for establishing effective property rights. In a study conducted in 2000, he introduces conditions in which a government supporting property rights in an anarchist society would or would not lead to improvement which is determined by the existing conditions. Mendoza (1999), too, introduces situations in which the government acts as a free-rider in the protection of property rights by the private sector.

Elickson (1991) states that the efficiency of informal strategies in protecting and supporting property rights and contracts might be more than that of legal structures and the establishment of laws and discipline could even

destroy the out-of-law governance because setting legal restrictions might be accompanied by rent-seeking motives (private or state) and destroying motivation for private cooperation. Some believe that in order to have more efficient, what is essential is trust and thus, there is no need for government's interference in this area.

Clague (1996) believes government can violate their citizens' property rights and contracts in a number of ways including direct expropriation, default (not paying people's debt), devaluing currency, prohibiting any transaction except for those done formally and in fixed prices, and failure in offering legal infrastructure which conduct contracts impartially and settle disputes on property rights.

Some economists such as Gallanter (1981), Grief (1989) deem private protection better than protection through setting legal regulations. They state that private enforcement is more efficient when economic factors experience repetitive interactions. In contrast, Hay and Shleifer (1998) and Hay, Shleifer and Vishny (1996) believe that in developing economies, considering the change of conditions, private enforcement leads to the increase of indiscipline and the violation of rights and disrupts the protection of property rights.

Unlike the private-ordering view, the legal centralist view believes that property rights must be defined and ensured by the government. Theories of economics of the common sector state that legal regulations which are done by the government in a society are aimed to confront market failure and external consequences. By internalizing effects of external consequences we could increase the protection of property rights (Pigue, 1938 and Stiglitz, 1989). Proponents of legal-centralist view believe property rights could not exist without legal strengthening, planning and without considering the monopoly power of the government (Gleaser and Shleifer, 2001).

Discussions regarding the importance of the government as a third party in conducting contracts and protecting property rights has a long history. Thomas Hobbes (1651) and three centuries later, Max Weber (1927) have discussed the importance of the government in this regard and John Locke (1677) emphasized the need for the government to protect and support property rights. In addition, Adam Smith (1776) views achieving appropriate and acceptable justice as an appropriate function of the government. He advocates setting legal adjustments by the government. He also states that the private enforcement of property rights might be ruined by the rich and powerful people and inconvenience the establishment of justice in the society.

Raising the key issue of the distinction between self-enforcement transactions and transactions which need a third party, North (1990) emphasizes the significance of the government. In spite of that, the role of the government as the fundamental prerequisite for economic growth has been viewed as an important issue. According to Posner (1998), the fixed and high costs of the protection of property rights and the private enforcement in this area are factor supporting the choice of setting legal regulations by the government in order to enhance efficiency. The reason why Shavell (1984) considers setting legal regulations by the government for protecting property rights as more efficient is that people who violate the rights of others can deflect the process of enforcing property rights from its legal course. Hence he considers the private protection system as vulnerable. Stiglitz argues that because of the existence of the endangering behavior regarding violating rights of the others especially in the developing countries, it is necessary that governments set legal regulations and protect property rights. However, Hernando and De Soto (1989) and Djonkov *et al.* (2002) offer evidence shows that the implementation of these legal adjustments in some cases leads to the increase of corruption and lack of protection of property rights.

In fact, there are two essential duties for the government in protecting property rights:

1. Protecting public property (such as tax venue or venue or venue gained from natural resources and oil) from the abuse of private individuals (individuals and groups who have shared interests, bureaucrats, politicians and other people).

2. Protecting private property from the misuse of others as well as public abuse (expropriating people's properties to the benefit of the government). Not only are individuals not protected from others' violating their rules, but they may even be harmed by the greatest power in the society, i.e. the government. In such a situation, not all interests gained from investment and long-term contracts are achievable. The prerequisite for security and property rights is a court system, independent judiciary and respect for the law and individuals' rights all of which are public goods and the government is responsible for offering them. In order to impartially conduct contracts and settle disputes we need a secure and reliable government which respects people's rights. Such rights are the results of a certain section of the state institution and without the government described above; there will be no private ownership (Bardham, 2005).

When the protection of property rights is discussed, in addition to the property rights and their protection, the state and the public property rights are intended too. In order to perform its protection duties, the government uses major income resources such as tax venue, venue gained from natural resources and great natural riches such as oil and gas. Such venue could be stolen too. Private individuals, pressure groups, government agents and bureaucrats can steal such venue in different ways especially by appropriating resources. In such conditions, the legal-centralist view is gains power and the private individuals will refuse to protect such property rights.

Determining property rights and supporting these rights and implementing contracts require using resources. These resources are use to measure and evaluate contracts' characteristics. When such a duty is

assigned to the private sector and the government does not allow such costs, then economic activities are restricted to private transaction systems and only contract with self-enforcement characteristics are signed. Besides, businesses will be restricted to capital earned from their small-scale performance with their relatives' savings. Therefore, the government's responsibility for activating the economic activities of businesses and enlarging their scale is to sign long-term contracts supervised by a third party and to define and protect property rights. The government will thus decrease transaction costs since in every assumed structure of property rights, the transaction costs are positive and because achieving rights from these properties is a function of the institutional framework (legal regulations, corporate form, enforcement of rights and behavioral values), it is not possible to completely determine and enforce these rights. However, as the third party, the government can reduce transaction costs by expanding a non-private collection of rules and enforcing them. Making such a collection will substantially reduce the negotiation and enforcement costs. The governments will emphasize and enforce such a structure of property rights that it will form the motivational structure of the society. Of course the efficiency of such a structure depends upon their political system (Olson, 2003 and North 1990).

Sened (1997) introduces four necessary and sufficient conditions for the enforcement of property rights:

1. These rights must be valued by people in the society so much so that people feel a need for them.
2. Owners of property rights must demand these rights.
3. The lawmakers must be willing to enforce the rights.
4. Those who have an influence on the rights must respect them.

Giving an example, he shows that property rights could not exist without the enforcement of a centralized law. Stating that the government has monopoly power in defining and protecting property rights, he views property rights as the result of the mutual interaction of political agents and government officials. He believes it is the government's responsibility to grant the rights before protecting them.

Some contracts are self-enforcing and some others require the interference of a third party for being enforced. Even considering the self-enforcing effects of these contracts, the government could still play the four decisive and determining roles in enforcing contracts and protecting property rights. Clague et al. (1996) state these roles as follows:

1. The government may found an independent institution or an institute in order to announce the breaches of contracts and to follow up those breaches.
2. The government enacts laws whereby private plaintiffs organize themselves in formal groups such as commercial, professional, etc. Associations and defend their rights.
3. In case of lack of self-enforcement mechanisms, the government offers the third-party enforcement structure.
4. The government is responsible for establishing peace in the society. Whenever economic employers, based on the self-enforcement contracts, have any kind of lucrative transaction or investment, it is probable that they face expropriation and despoilment by the government. Here, the legal-centralist view makes the government responsible for using its legal power to keep itself from despoiling private sector (such an objective could not be achieved by using the private-ordering view). In fact, in most legal and economic texts the importance of the government in enforcing property rights and contracts has been considered to be in this area (Bardham, 2005).

Considering the private-ordering and legal-centralized views, the protection of property rights is results from political choices and social institutions and therefore, supporting it requires creating balance between the following:

1. An active government which enforces property rights, facilitates contracts of the private sector, and uses fair laws for everyone.
2. A sufficiently restricted and constrained government which cannot expropriate people's properties.

Creating such balance, itself, depends upon the society's social-political structure, the governing economic system and the kind of the society's property rights. Therefore, various factors affect a society's property rights including political, social, cultural and economic factors. Besides, paying attention to the structure (private, public, shared, free access, and a blend of these) of property rights will determine how to protect property rights.

Many factors affect the quality of property rights in the society which could be divided into political, social and economic (financial) indexes. These indexes are used by researchers in various studies. These factors include: GDP per capita, proportion of urban population, level of people's literacy in the society, structure of economy in various sectors (formal and informal), degree of openness of economy, income inequality, land inequality, ethnic tension, political polarization, ethnic polarization, linguistic polarization, social capital, corruption in government, bureaucracy quality, expropriation risk, reduplication of contracts, and the rule of law (Haunter and Kyobe, 2008).

Keefer and Knack (2002) argue that the increase of social and political polarizations leads to the decrease in the stability of the governments' policies and this in turn leads to more deviation from the government's objectives in the long term. Accordingly, the degree of uncertainty of the government's policies is increased and people restrict their economic activities and perform activities which have a lower risk. Hence, a major amount

of their capital remains unused which leads to the decrease of economic growth. Besides, due to making major changes and numerous deviations from the government's policies, the increase in social polarizations leads to the decrease of the protection of property rights.

Besides, there is the common agreement among researchers that costs of the protection of property rights done by the government depend upon the acceptability of these rights in the society and that it is important how much these rights are accepted by people in the society. Therefore, in a society where people have greater confidence in one another and in the government, the protection of property rights is enhanced. In addition, the more ethnicities and various dialects exist in the society, the more social capital increases within these groups and the more it diminishes between them and hence the protection of property rights is diminished.

Weak governments are often unable to protect property rights. In such societies, citizens rely upon private enforcement to protect their properties and safely transfer them (Carruthers and Ariovich, 2004). Notwithstanding, empirical findings of some studies shows that the private system of enforcing property rights and contracts is not a successful alternative for legal institutions (Cross, 2002).

In addition, different social groups might be interested in different aspects of the protection of property rights. The poor might be interested in land ownership rights, and the rich in bankruptcy rules, capital markets, etc. therefore, such social stratification and different interests will cause property rights and the structure of its protection to enjoy different political stability (Bardham, 2005).

Prasad (2003) believes that it is not the type of property rights which determines economic performance. Rather, it is the economic system that determines what type of property rights is established. Therefore, the structure of the economic system ruling the society will determine the optimal type of property rights and hence determine who is responsible for protecting property rights.

In private-enforcement mechanisms, although people pay high costs to protect their rights, the chances for the complete protection of their rights are low. Therefore, compared with legal regulation system, these mechanisms are more prone to destruction and this phenomenon is more prevalent in environments which lack a regulated system. Thus in such societies, legal regulation or a blend of private-enforcement and legal regulation would be more efficient than private-enforcement mechanisms (Gleaser and Shleifer, 2003).

Landis (1938) views legal regulations as a political reaction to the failure of the private-enforcement of property rights in establishing justice in the society.

3. Mathematical Model

The assumptions of mathematical model are as below:

- There are two main mechanisms of property rights protection; private enforcement and public enforcement. Private enforcement is defined via liability system and public enforcement is defined via regulation system and also joint combination of two types is available.
- Parties allocate funds for reducing risk of un-protective property rights effects and protect their property rights.
- X is the level of property rights protection by private sector that can be defined as property rights protection costs and is non- negative.
- $p(x)$ is define as probability of assets obviation because of un-protective property rights; $0 < p(x) < 1$, $p'(x) < 0$ and $p''(x) > 0$.
- S Is regulatory standard level of property rights protection that set by regulator and same for all parties
- h is the magnitude of lose in assets obviation because of un-protective property rights where differs among parties, each of whom knows his own h but The regulator is aware only of the distribution of h . So $f(h)$ is uniformly distributed probability density of h ; $f(h) > 0$ on and only on $[a, b]$, $0 < a < b$

3.1. The model

Assume that the social welfare criterion is the minimization of-the expected sum of the costs of care and of harm done. Thus, the welfare-maximizing or first-best level of care as a function of a party's h is determined by minimizing over x

$$ECS = x + p(x)h \quad (1)$$

The first-order condition is therefore:

$$1 = -p'(x)h \quad (2)$$

Which means that the marginal cost of care, 1, equals the expected marginal benefits, $-p'(x)h$. Denote by $x^*(h)$ the first-best level of care and observe that it is increasing in h and we assume that the condition (2) holds for the first-best x for all h in $[a, b]$, that is, that $1 < -p'(\cdot)a$

Differentiate (2) with respect to h :

$$0 = -p''(x)x'(h)h - p'(x) \Rightarrow x'(h) = \frac{-p'(x)}{p''(x)h} > 0 \tag{3}$$

3.2. Private Enforcement as the sole mechanism of protecting property rights

In this case we assume that all parties transact with each other and use private enforcement of property rights protection so if one party damage other parties assets, then he may liable via liability system.

Assume that the damage some parties might do exceeds their assets; and assume also that parties might escape suit. Thus, define:

y = level of assets; $0 \leq y < b$; and

q = probability of suit, given that harm has been done; $0 \leq q \leq 1$

Where y and q are the same for each party. Now if a party causes damage h and is sued, he will be liable for h , but will pay that amount only if $h \leq y$. Hence, his problem is to choose his level of care x to minimize:

$$ESC(1) = x + p(x)q \min\{h, y\} \tag{4}$$

If $x(h)$ be the chosen level of x in value h , so under private enforcement of property rights protection, the level of property rights protection that chose by each party; then:

$$x_l(h) = x^*(q \min\{h, y\}) < x^*(h) \tag{5}$$

Hence, as shown in Figure 1, the level of care is less than first-best, but it increases with the magnitude of the potential damage so long as this is less than the level of assets.

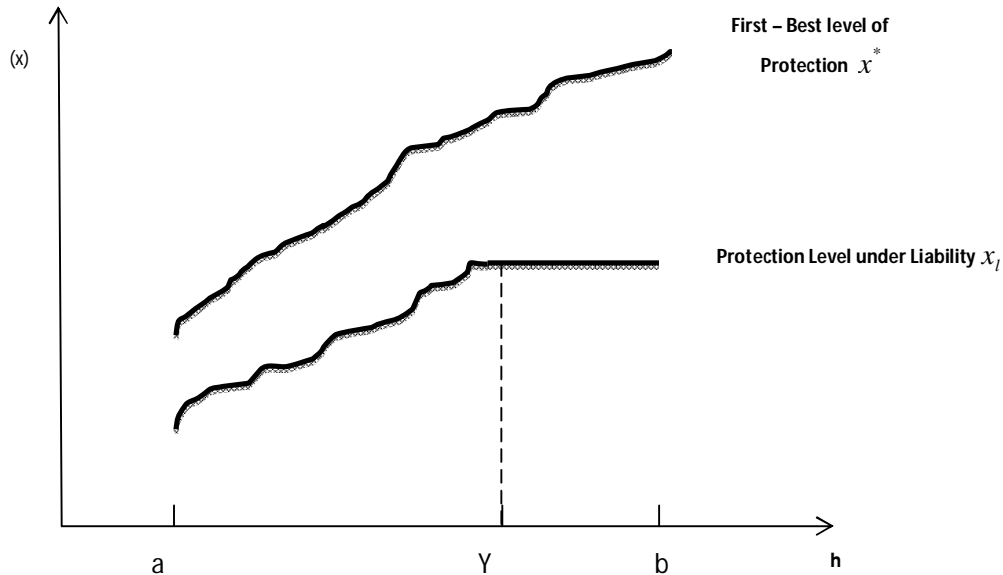


FIGURE 1: First-Best Level of Protection vs. Protection Level under Liability

3.2. Public Enforcement as the sole mechanism of protecting property rights

In this case we assume that a central planner (regulator), protect property rights and the regulatory standard level of property rights is s and the regulator is aware only of the distribution of h . So $f(h)$ is uniformly distributed probability density of h ; $f(h) > 0$ on and only on $[a, b]$, $0 < a < b$

So the regulator's problem is to minimize over s :

$$ESC(2) = s + p(s) \int_a^b h f(h) dh = s + p(s)E(h) \quad (6)$$

If s^* be the optimal regulatory standard level of protection and the solution of (6), then the optimal regulatory standard equals the level of protection that would be first-best for a party posing the average risk of harm is:

$$s^* = x^*(E(h)) \quad (7)$$

In particular, parties are presenting a risk of harm less than $E(h)$ take more care than is first-best, and those presenting a risk higher than $E(h)$ take less care than is first-best. Figure (2) shows this condition.

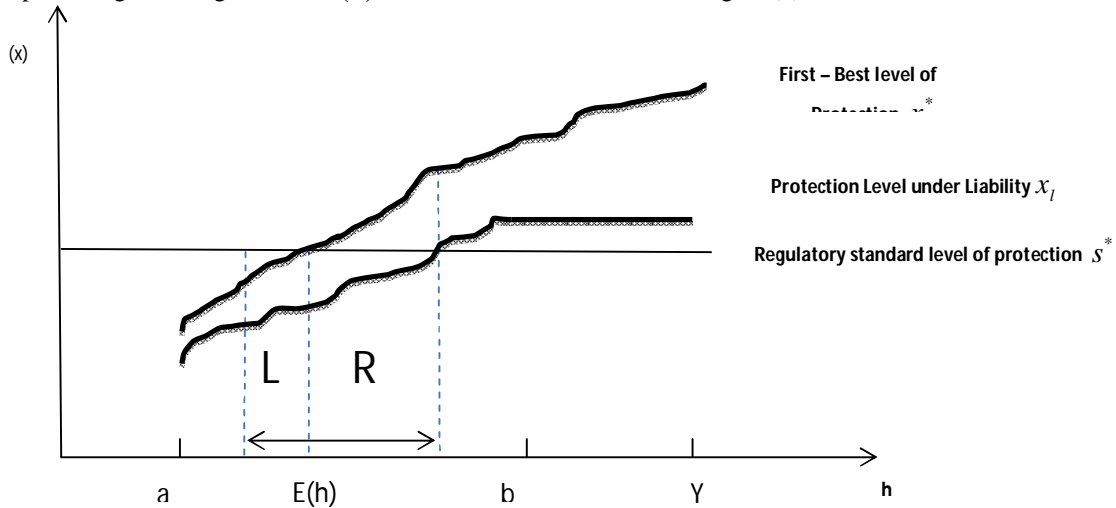


Figure 2: **Private Enforcement and Public Enforcement**

As we see in figure 2, in R region Public Enforcement is superior to Private Enforcement and in L region Private Enforcement is superior to Public Enforcement.

3.3. Public Enforcement (Regulation) versus Private Enforcement (Liability)

The difference in expected social costs between the situations where private enforcement (liability) alone is employed and that where only public enforcement (the optimal regulatory standard) is used is:

$$ESC (3) = \int_a^b \{ [x_l(h) + p(x_l(h))h] - [s^* + p(s^*)h] \} f(h) d(h) \quad (8)$$

So Use of regulation is superior to use of liability if the factors that dilute the incentive to take care under liability are sufficiently important (q or y sufficiently low) or if the variability among parties is sufficiently small (h sufficiently concentrated about $E(h)$); otherwise liability is superior to regulation. For proofing this proposition we first want to show that, given y , there is a $q(y)$ where $0 < q(y) \leq 1$ such that regulation is superior to liability for $q \leq q(y)$ but not otherwise. Now if q or y equals 0, Then (4) implies that $x_l(h)$ is identically equal to 0, and thus the situation is as if $s = 0$. But since s^* is the (unique) optimal s and is positive, social costs must be lower under regulation than when q or y equals 0. This fact and the continuity of social costs in q imply that for any y , regulation is superior to liability for all q sufficiently small. Moreover, if Liability is superior to regulation for some q , then the same must be true for any $q_2 > q_1$, for social costs are easily shown to be decreasing in q under liability, but are unaffected by q under regulation.

3.4. Joint use of Public and Private Enforcement

Neither Public Enforcement (Regulation) nor Private Enforcement (Liability), however, leads all parties to exercise the socially desirable levels of care. Regulation does not result in this outcome because the regulatory authority's information about risk is imperfect, while liability does not create sufficient incentives to take

appropriate care because of the possibility that parties would not be able to pay fully for harm done or would not be sued for it. Depending on the importance of these factors, either regulation or liability could turn out to be preferred when considered as an alternative to the other.

In this condition the level of care will be given by:

$$OL = \max \{ s, x_i(h) \} \tag{9}$$

It is evident that, in this situation the problem of the regulatory authority is to minimize over s :

$$ESC(4) = \int_a^b [\max \{ s, x_i(h) \} + p(\max \{ s, x_i(h) \})h] f(h) d(h) \tag{10}$$

Or equivalently the problem is:

$$\min \{ \min_{0 \leq s < x_i(b)} \int_a^{h(s)} [s + p(s)h] f(h) d(h) + \int_{h(s)}^b [x_i(h) + p(x_i(h))h] f(h) d(h), \min_{s \geq x_i(b)} s + p(s) \int_a^b h f(h) d(h) \}$$

If s^{**} is the solution to this problem, then two possible types are proposed:

- (a) The optimal regulatory standard is less than the optimal standard were regulation used alone, but it exceeds the first-best level of care for those parties posing the least risk of harm; that is:

$$x^*(a) < s^{**} < s^* \tag{11}$$

Furthermore, in this case some parties are induced by liability to take more care than the required standard s^{**}

A sufficient condition for (10) to hold is:

$$x_i(b) > s^* \tag{12}$$

Or equivalently, that the incentive to take care is not excessively diluted (q sufficiently close to 1, y sufficiently close to b).

- (b) The optimal regulatory standard equals the optimal standard where regulation alone was employed; that is:

$$s^* = s^{**} \tag{13}$$

In this case no party is induced by liability to take more care than s^{**} . This will obtain if $x_i(b)$ is sufficiently low, or, equivalently, if the incentive to take care is sufficiently diluted (q or y sufficiently low).

A joint Combination of two mechanisms is shown in figure (3)

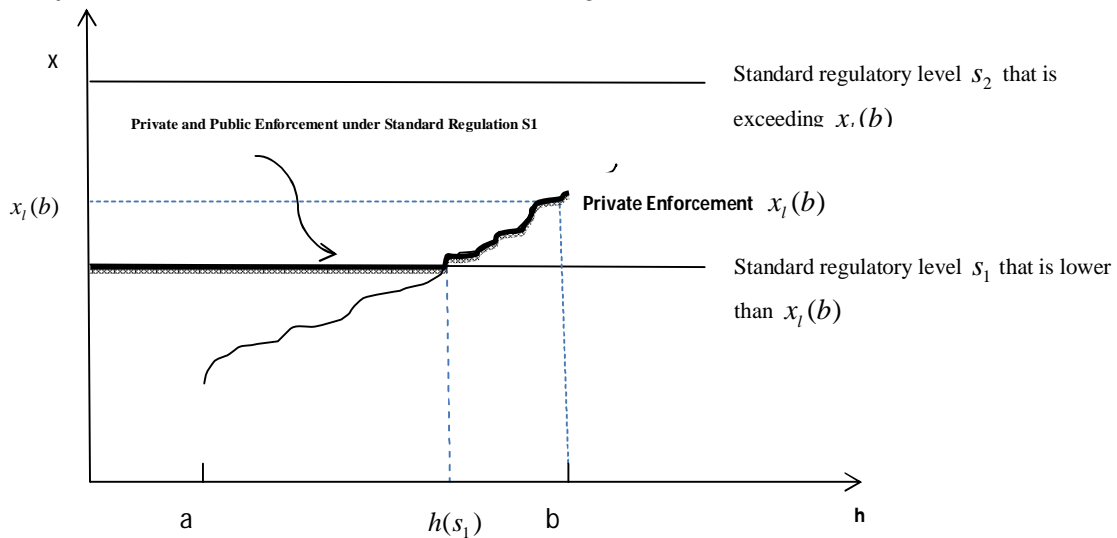


Figure 3: Joint Enforcement of Private and Public

4. Conclusion

In this paper, first we introduce property rights concept and also property rights protection that includes facilitating private contracts and restricting compulsion, threats, and expropriation by the government. Then we propose two general economic theories in property rights protection, those are Private-Ordering view and Legal-Centralist view.

In Private- ordering view, to achieve mutual benefits of exchange, economic employers define and protect property rights without referring to the role of the government but unlike the private-ordering view, the legal-centralist view believes that property rights must be defined and ensured by the government.

At last we propose a mathematical model for property rights protection mechanisms. According to the findings, measures taken by the central planner (the government) to appropriately protect property rights could not completely cover the risk resulting from not preserving property rights because in the one hand, the centralized planner (the government) could not have access to full information regarding people's properties. In the other hand, the private enforcement of property rights will not yield desirable results because the costs of private enforcement are very high and the private sector cannot afford all these costs. Therefore, in such a situation, none of the enforcement methods, neither private enforcement nor enforcement by the centralized planner, is preferable over the other one. Thus, a blend of these two enforcement methods could always yield better results and cut down on social costs and improve social welfare.

REFERENCES

- Alchian, Armen A. (1961), *Some Economics of Property Rights*, Rand Paper, Rand Corporation.
- Aoki, M. (2007). *Institutions and institutional changes*, Journal of Institutional Economics, Vol.3, pp.1-31
- Bardham, P. (2005). *Law and Economics in the tropics: some reflections*, International Review of Law and Economics, Vol.25, pp. 65-74
- Burki, S. and G. Perry. (1998), *Beyond the Washington Consensus: Institutions Matter*, Washington DC: World Bank.
- Carruthers, B. G., and L. Ariovich (2004), *The Sociology of property rights*, Annual Review of Sociology, Vol.30, pp.23-46
- Chong, A., and L. Zanforlin. (2004). *inward- Looking Policies, Institutions Autocrats and Economic Growth in Latin America: an empirical exploration*, Journal of Public Choice, Vol. 121, pp.335-361
- Clague, C., P. Keefer, S.Knack, and M.Olson. (1996). *Property and Contract rights in Autocracies and Democracies*, Journal of Economic Growth, Vol.1, pp.243-276
- Clague, C., P. Keefer, S.Knack, and M.Olson. (1996). *Contract-Intensive Money: contract enforcement property rights and economic performance*, Journal of Economic Growth, Vol.4, pp.185-211
- Coase, R. (1960). *The Problem of Social Cost*, Journal of Law and Economics, Vol.3, pp.1-44
- Commons, J.R. (1924). *The Legal Foundations of Capitalism*, University of Wisconsin Press
- Cross, E.B. (2002). *Law and Economic Growth*, Journal of Texas Law Review, Vol.80, No.7, pp.1736-1775
- Demsetz, Harold. (1964), *the Exchange and Enforcement of Property Rights*, Journal of Law and Economics, Vol.7, pp. 11-26.
- Djankov, S, R, Florencio, F and Andrei Shleifer. (2001). *The Regulation of Entry forthcoming*, Quarterly Journal of Economics
- Eggertson, Thráinn. (1990), *Economic Behavior and Institutions*, Cambridge: Cambridge University Press.
- Ellickson, R. (1991). *Order without Law: How neighbors resolve disputes*, Harvard University Press.
- Fedderke, J.W., R.H.J. de Kadt and J. M. Luiz. (2001). *Indicators of Political liberty, Property rights and political instability in South Africa: 1935-97*, International Review of Law and Economic, Vol. 21, pp.103-139.
- Furboton, E.G., and S. Pejovich. (1972). *Property Rights and Economic theory: A survey of recent literature*, Journal of Economic Literature, No.10, pp.1137-1162.
- Gallanter, M. (1981). *Justice in many rooms: courts, private ordering, and indigenous law*, Journal of Legal Pluralism, Vol. 19, No.1, pp.1-47

- Gleaser, E.L., and A. Sheifer. (2001). *A Reason for quantity regulation*, American Economic Review Papers and Proceedings, No.91, pp.431-435
- Gleaser, E.L., and A. Sheifer. (2003). *The Rise of Regulatory State*, Journal of Economic Literature, Vol.41, No.2, pp.401-425
- Greif, Avner. (1989), *Reputations and Coalitions in Medieval Trade: Evidence on the Maghreb Traders*, Journal of Economic History, Vol.49, No.4, pp.857-882
- Grossman, H.J. (2001). *The creation of effective property rights*, AEA Papers and Proceeding, Vol.91, pp.333-350
- Hodgson, Geoffrey M, (2004), *the Evolution of Institutional Economics*, London, Routledge.
- Hamilton, W.H. (1932). *Institution, Encyclopedia of the social sciences*, Vol.8, New York: Macmillan, pp.84-89
- Hay, J., Shleifer, A and Robert Vishney. (1996). *toward a theory of Legal Reform*, European Economic Review, Vol. 40, No. 3, pp. 559-567.
- Hodgson, Geoffrey M. (2006), *what are Institutions?* , Journal of Economic Issues, Vol. XL, No: 1, 1-25
- Hohfeld, W. N. (1993). *Some fundamental legal conceptions as applied in judicial reasoning*, Yale Law Journal, No. 23, pp.16-59
- Kaplow, L and Steven Shavell. (2002). *Economic Analysis of Law*, NBER Working Paper 9960, and Cambridge, MA: National Bureau of Economic Research.
- Kaufmann, D., and A. Kraay. (2002), *Growth without Governance*, *Economia* Vol. 3(1), pp. 169-230.
- Keefer, P., and Knack. (2002). *Polarization, politics and property rights and growth*, Journal of Public Choice, Vol.111, pp.71-96
- Knight, J. (1992). *Institutions and Social Conflict*, Cambridge University Press
- Landis, James M. (1938). *The Administrative Process*, New Haven: Yale University Press
- Libecap, G. D. (1986), *Property rights in economic history: Implications for research*, Explorations in Economic History, Vol. 23
- Mendoza, J. (1999). *Private and Public Protection of Private Property: The Government as Free- Rider*, State University of New York Press
- Neale, W. C. (1987). *Institutions*, Journal of Economic Issues, Vol.21, No.3, pp.1177-1206
- North, D. (1991). *Institutions*, Journal of Economic Perspectives, Vol.5, No.1, pp.97-11
- Pelikan, Pavel. (1988), *why the Imperfect Innovation System of Capitalism cannot be outperformed*, in Giovanni Dosi et al., eds. 1988, *Technical Change and Economic Theory*. London: Pinter.
- Prasad, B, C. (2003). *Institutional economics and economic development*, Journal of Institutional Economics, pp.741-763
- Rodrik, Dani, Arvind Subramanian and Francesco Trebbi. (2002), *Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development*, Working Paper.
- Sened, I. (1997). *The Political Institution of Private Property*, Cambridge University Press
- Shavell, Steven. (1984). *A Model of the Optimal Use of Liability and Safety Regulation*, Rand Journal of Economics, Vol.15, pp. 271-280.
- Shavell, Steven. (1984). *Liability for Harm versus Regulation of Safety*, Journal of Legal Studies, Vol.13, pp.357-374
- Veblen, T. (1898). *Why is economics not an evolutionary science?*, Quarterly Journal of Economics, Vol.12, No.12, pp.373-397
- Williamson, O. E. (1985). *The Economic Institutions of Capitalism*, Free Press, New York